

AUDIO DSP

YDA174 DD-2SP

AudioEngine™ HD DSP and DIGITAL AUDIO POWER AMPLIFIER

YAMAHA
CREATING 'KANDO' TOGETHER

((Royal Box
at Home))



Listening is part of everyday life, and that's why you deserve great sound. This is the concept behind the YDA174 — a DSP with built-in power amp.

A full-fledged 32-bit floating point DSP that can compensate for the acoustic response of the specific chassis, as well as apply a variety of acoustical effects for further enjoyment.

A high-output 20W class-D power amp is built-in, delivering natural sound and powerful volume.

Applications

- ▶ Flat-screen televisions
- ▶ PC monitors
- ▶ Digital stereo components
- ▶ Home theater systems
- ▶ Karaoke equipment

Main features and specifications

Digital power amp

▶ Maximum output power

20Wx2ch (VDDP=14V, RL=4Ω)
15Wx2ch (VDDP=15V, RL=8Ω)
10Wx2ch (VDDP=12V, RL=8Ω)

▶ Top-class audio performance

SNR = 105dB, Noise Level = 50μVrms, THD+N = 0.05%

▶ Feedback amplifier

Feedback design for superior power supply noise rejections

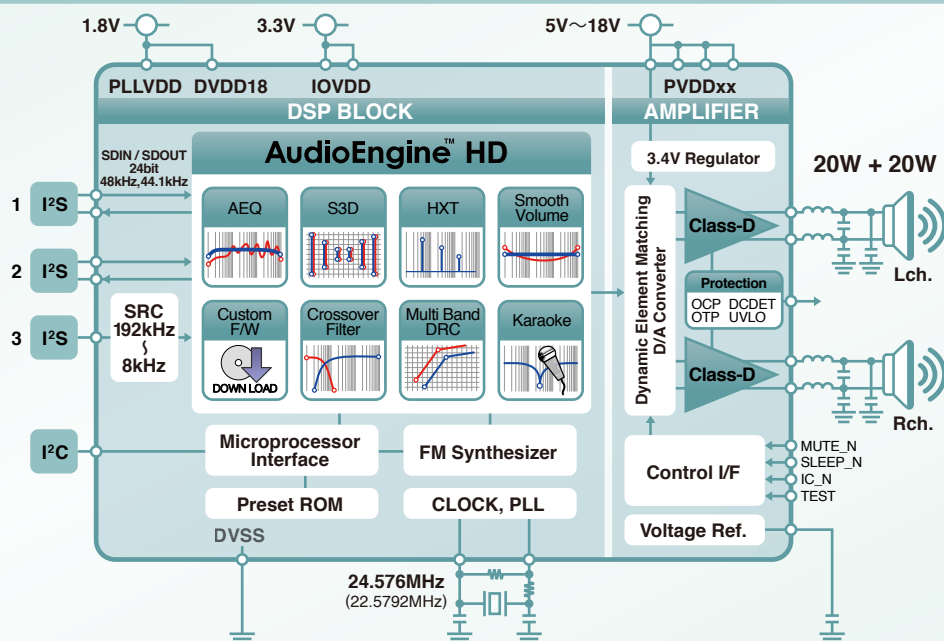
▶ Protected against terminal matrix shorts

Shorts between any two pins will never cause smoking or ignition.

Programmable DSP

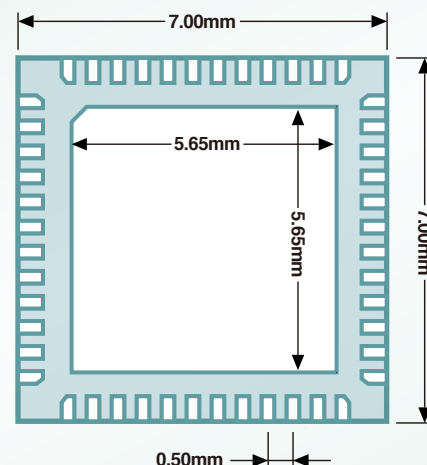
- ▶ 32-bit floating point DSP
- ▶ "Acoustic total-linear EQ (also called AEQ)" acoustics tuning technology
- ▶ "Spacious sound 3D (also called S3D)" surround
- ▶ "Harmonics enhancer Extended (also called HXT)" bandwidth expansion technology
- ▶ 58 different melodic sounds
- ▶ Support
 - Development tools provided
 - Acoustics tuning support

APPLICATION DIAGRAM



PACKAGE

BOTTOM VIEW



QFN48 (YDA174-QZ)

7.00mm(W)×7.00mm(D)×0.90mm(H)

POWER AMPLIFIER

The output features a high-efficiency 20W class-D stereo amp, conveying the clear DSP-processed sound directly to the listener.

High-quality feedback amp

Feedback amplifiers enjoy high stability and excellent power supply noise rejections. The low-noise low-distortion output faithfully reproduces even the most delicate nuances of the sound.

Save space with fewer peripheral components

The power supply bypass capacitor can be minimal. The output pulse shape has been optimized to reduce electromagnetic interference, allowing a simple filter to suffice.

Rich variety of protective functions

Every conceivable protection has been built in, allowing you to use the YDA174 with confidence.

- Overcurrent protection
- Thermal protection
- DC output protection
- Undervoltage lock out
- Overvoltage protection
- Pin matrix short protection

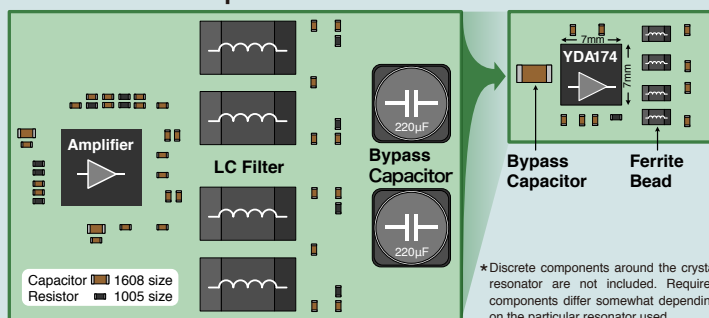
Peripheral component layout example

Peripheral component count

47 items

Competitor

15 items YDA174



PROGRAMMABLE DSP

Acoustic total-linear EQ

Acoustic total-linear EQ is "total linear phase acoustic tuning technology" that compensates for the acoustic response of a specific chassis, not just in the frequency domain but also in the time domain.



Spacious sound 3D

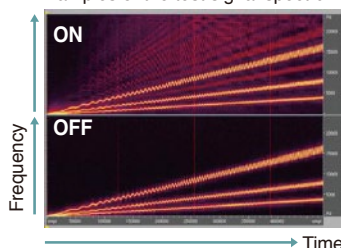
This places movie dialogs in the center while positioning the sound effects not merely to left and right but also in front and behind, enveloping the listener.



Harmonics enhancer Extended

Boosting the sub-harmonic of bass components and reconstructing mid and treble components lost in audio compressions adds perceptual depth.

Examples of the test signal spectrum



* This is bandwidth expansion technology utilizing the missing fundamental perceptions.

Karaoke

The built-in voice cancellation effect allows casual karaoke enjoyment. Mic echo, reverb, and key control are possible.

